

# Syllabus for Math 222, Fall 2015

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## General Information About All Sections

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## Contact Information

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The instructor for your section will provide you with contact information. General Administration of Course: Prof. Alex Feingold

## Class Meeting Schedule - All Sections

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| Section | Instructor    | Days | Times       | Room    |
|---------|---------------|------|-------------|---------|
| 01      | Binbin Huang  | MWF  | 8:00-9:30   | LN 2409 |
| 02      | Simon Joyce   | MWF  | 8:00-9:30   | LN 2447 |
| 03      | David Biddle  | MWF  | 8:00-9:30   | EB R15  |
| 04      | Mathew Wolak  | MWF  | 8:00-9:30   | SL 302  |
| 05      | Binbin Huang  | MWF  | 9:40-11:10  | LN 2409 |
| 06      | Simon Joyce   | MWF  | 9:40-11:10  | LN 2447 |
| 07      | Alex Feingold | MWF  | 9:40-11:10  | WH G002 |
| 08      | Jaiung Jun    | MWF  | 11:20-12:50 | LN 2409 |
| 09      | Adam Allan    | MWF  | 11:20-12:50 | LN 2447 |
| 10      | Matt Zaremsky | MWF  | 11:20-12:50 | WH G002 |

## Prerequisites

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A grade of C- or better in Calculus I is required, but a grade of C or better is HIGHLY RECOMMENDED. Historical data shows that students with just C- in Calculus I usually had serious trouble in Calculus II. You have been warned!

## Office Hours

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Each instructor will inform you of office hours or scheduled problem sessions outside of class times.

## Textbook

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"Calculus Single Variable" by James Stewart, Eighth Edition (with WebAssign Access Code), Cengage Learning, 20 Channel Center Street, Boston, MA 02210, USA, ISBN: 978-1-305-26663-6.

## Objectives and Course Contents

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The main goal of Calculus II is to continue the development of differential and integral calculus started in Calculus I, including specific topics which have been found to be valuable for applications in many other fields. Students will be introduced to new classes of functions including the exponential functions, logarithm functions, and inverse trig functions. Students will then learn how to apply the techniques of Calculus (differentiation and integration) to those functions. The method of L'Hospital's Rule will be taught for dealing with certain limits. Various techniques for integration will be taught (integration by parts, trig integrals, trig substitutions, partial fractions, and improper integrals). Infinite sequences and series will be studied, and methods for investigation of their convergence will be taught (the integral test, the comparison tests, the ratio and root tests, alternating series, absolute convergence and power series). Methods of representing functions as power series with a radius of convergence will be taught, as well as the Taylor series representations of a given function. We will study several applications of integration, including: finding the length of arc of a curve, finding the area of a surface of revolution (even when the equations are given in parametric form, in rectangular or polar coordinates). Depending on time, the course may conclude with the study of conic sections. The course material is vital to the study of Calculus III and Differential Equations, and is very useful in many other courses in the Department of Mathematical Sciences and in other departments (e.g., Physics, Chemistry, Biology, and Economics).

## Help Outside of Class

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The Calculus 2 Help Room room, located in Whitney Hall (WH-235), is staffed by some of the instructors and will be open starting Sept. 8, 2015, during most business hours. Students can walk in with no appointment and can ask questions of any available instructor. The exact schedule for this semester will be posted here soon. [Click here for the Help Room schedule.](#)

People learn in many different ways: through reading, listening, practicing and working with others. Students may wish to work with others while doing the practice problems or preparing for an exam. That is acceptable and even encouraged. However, unethical behavior in this class will not be tolerated. Cheating on an examination, or any other ethics violation, will result in a serious penalty. See the section below on Academic Honesty.

## General Comments

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Regular class attendance is required for success in this course. Lack of attendance will most likely result in a lower grade. When a student does not come to class, it is a clear message to the instructor that the student does not think he/she can teach them. The instructor may assign 30 points of your total score based on attendance, classroom participation or additional quizzes, and will decide borderline cases. The material is a combination of theory and calculation, and it is necessary to understand the theory in order to do sensible calculations and interpret them correctly. Lectures can be interrupted at any time for questions. At the start of each class be ready to ask questions about homework problems or about the previous lecture. A grade of C or better in Calculus I is strongly recommended for this course. If you do not meet that condition, see the instructor immediately for advice.

Student use of cell phones and other electronic devices is becoming increasingly disruptive in class and is actually insulting to the instructor. Holding the cell phone in your lap and looking down to text does not make you invisible! All electronics should be turned off and put away before the beginning of class. Students found using such devices may be asked to leave the class.

## University Attendance Policy

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Students are expected to attend all scheduled classes, laboratories and discussions. Instructors may establish their own attendance criteria for a course. They may establish both the number of absences permitted to receive credit for the course and the number of absences after which the final grade may be adjusted downward. In such cases it is expected that the instructor stipulate such requirements in the syllabus and that the syllabus be made available to students at or near the beginning of classes. In the absence of such statements, instructors have the right to deny a student the privilege of taking the final examination or of receiving credit for the course, or may prescribe other academic penalties if the student misses more than 25 percent of the total class sessions. Excessive tardiness may count as absence.

If you are seriously ill (running a fever, upset stomach) you should not come to class. Documented illness of this sort is an excused absence and will not be counted against your attendance grade. Absence for more than one or two days needs to be documented by health services. If you are going to be ill for an extended period of time (a week or more) be sure to contact your instructor as soon as you can so that plans can be made for you to make up the work you will be missing.

## Homework

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For each section of material covered there will be an assignment of problems on WebAssign. Your WebAssign homework counts towards your grade. Study groups are encouraged, but students should not become too dependent on others. Watching the instructor, or other students, do the problems will not be enough to learn the material. It will be necessary for you to do many exercises yourself in order to be successful on the exams. Attempts to solve homework problems provide the best way to learn the material and to prepare for exams.

WebAssign is an online homework system which includes an e-book version of our text. If you buy the textbook through the University bookstore it comes with an access code for WebAssign. If you do not buy the textbook from the bookstore then you will need to purchase an access code on the WebAssign website. You will have temporary free access to WebAssign for 2 weeks into the semester without an access code. If you bought a WebAssign access code from a previous semester, you do not have to buy it again. (Exception: if you only purchased one-semester access, you'll need to buy it again.) When logging into WebAssign for the first time you will need to self-enroll with a "Class Key". The "Class Key" will be provided to you by your instructor. All info for getting started with WebAssign can be found here [WebAssign Student Quick Start Guide](#)

Your username is your Binghamton University username and the institution code is "binghamton".

## Exams, Grading and Cheating

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There will be a total of 600 possible points, distributed in the following way:

|                        |                                              |
|------------------------|----------------------------------------------|
| WebAssign Homework     | 40 Points                                    |
| Instructor Adjustments | 30 Points                                    |
| Quizzes                | 30 points (for example, ten 3-point quizzes) |
| Exam 1                 | 100 points                                   |
| Exam 2                 | 100 points                                   |
| Exam 3                 | 100 points                                   |

|            |             |
|------------|-------------|
| Final Exam | 200 points. |
|------------|-------------|

Instructor adjustments to your grade may include: additional quizzes, attendance and classroom participation. Your grade will be determined primarily by your numerical scores on the quizzes, WebAssign homework, three exams and the final exam. For each exam the numerical score will be given a letter grade interpretation in order to give you some idea of how you stand in relation to all other students in the course. Your Total of all points at the end of the course will also be given a letter grade interpretation, which should be consistent with the average of all previous letter grades. Borderline cases can be adjusted up or down based on your instructor's judgment.

Here is a link to a practice Exam 1 and its solutions.

Here is a link to This semester's Exam 1 Version 1 and its solutions.

Here is a link to This semester's Exam 1 Version 2 and its solutions.

Here are the letter grade interpretations of the numerical scores on Exam 1. The average over all sections was 81.63.

| Letter Grade | Numerical Range |
|--------------|-----------------|
| A            | 92 - 100        |
| A-           | 88 - 91         |
| B+           | 84 - 87         |
| B            | 77 - 83         |
| B-           | 72 - 76         |
| C+           | 67 - 71         |
| C            | 60 - 66         |
| C-           | 55 - 59         |
| D            | 50 - 54         |
| F            | 0 - 49          |

Here is a link to a practice Exam 2.

Here is a link to Solutions to that practice Exam 2.

Here is a link to This semester's Exam 2 Version 1 solutions.

Here is a link to This semester's Exam 2 Version 2 solutions.

Here are the letter grade interpretations of the numerical scores on Exam 2. The average over all sections was 73.38.

| Letter Grade | Numerical Range |
|--------------|-----------------|
| A            | 90 - 100        |
| A-           | 86 - 89         |
| B+           | 82 - 85         |
| B            | 75 - 81         |
| B-           | 70 - 74         |
| C+           | 64 - 69         |
| C            | 56 - 63         |
| C-           | 50 - 55         |
| D            | 41 - 49         |

|   |        |
|---|--------|
| F | 0 - 40 |
|---|--------|

Here is a link to a practice Exam 3.

Here is a link to Solutions to that practice Exam 3.

Here is a link to This semester's Exam 3 Version 1 solutions.

Here is a link to This semester's Exam 3 Version 2 solutions.

Here are the letter grade interpretations of the numerical scores on Exam 3. The average over all sections was 78.24.

| Letter Grade | Numerical Range |
|--------------|-----------------|
| A            | 92 - 100        |
| A-           | 88 - 91         |
| B+           | 83 - 87         |
| B            | 77 - 82         |
| B-           | 72 - 76         |
| C+           | 67 - 71         |
| C            | 60 - 66         |
| C-           | 54 - 59         |
| D            | 46 - 53         |
| F            | 0 - 45          |

Here is a link to practice final exam problems covering sections 10.1-10.4.

Here are the letter grade interpretations of the numerical scores on the Final Exam. The average over all sections was 138.

| Letter Grade | Numerical Range |
|--------------|-----------------|
| A            | 180 - 200       |
| A-           | 170 - 179       |
| B+           | 160 - 169       |
| B            | 150 - 159       |
| B-           | 140 - 149       |
| C+           | 130 - 130       |
| C            | 110 - 129       |
| C-           | 95 - 109        |
| D            | 80 - 94         |
| F            | 0 - 49          |

Before each exam a practice exam will be posted here as a pdf file you may download. It will have the questions first, which you should try to answer without looking at the solutions. After each exam is graded and returned, a set of solutions will be posted here on this webpage. You should compare your exam to the solutions, and understand your mistakes so you will be able to do such problems correctly in the future. That would be a very good way to prepare for the final exam. If you do not understand your mistakes, or think your exam was not correctly graded, you should immediately (at most within two days) bring the test to your instructor for re-evaluation. If you are not satisfied with the re-evaluation of your test, you can appeal to the course coordinator, Prof. Feingold, whose decision will be final. **DO NOT MAKE ANY CHANGES OR WRITE NEW MATERIAL ON YOUR GRADED EXAM!!** Turning in a modified exam for extra points is CHEATING. Instructors may be making copies of random exams before they are

returned, so if a student changes a graded exam, it will be clearly shown by comparison with the copy.

Any cases of cheating will be subject to investigation by the Academic Honesty Committee of Harpur College.

## Academic Honesty

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Cheating is considered a very serious offense. According to the University Catalog, cheating consists of: "Giving or receiving unauthorized help before, during or after an examination". The full strength of Binghamton Academic Honesty Policy will be applied to anyone caught cheating. This may include failing the course, and further disciplinary action.

## Administration of Exams

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All exams for all sections will be administered at your normal meeting time in your normal meeting room.

The dates, times and places given below for Exams 1, 2 and 3 will be confirmed or modified before each exam.

The final exam for all sections will be administered in a common exam during Finals Week.

The schedule of exams is as follows:

Exam 1: Friday, Sept. 25, 2015.

Exam 2: Wednesday, Oct. 21, 2015.

Exam 3: Wednesday, December 2, 2015.

Final Exam: Thursday, Dec. 17, 2015, 5:40-7:40 PM, GW-69 (Gym West) for all sections.

Note that the Add/Drop Deadline is Sept. 11, 2015, and the Withdrawal Deadline is Oct. 30, 2015.

A detailed content of each exam will be determined one week before the exam, but we expect it to be as follows:

Exam 1: Sec. 6.1, 6.2\*, 6.3\*, 6.4\*, 6.5, 6.6, 6.8.

Exam 2: Sec. 7.1 - 7.4, 7.8, 11.1.

Exam 3: 11.2 - 11.11, 8.1, 8.2.

The Final Exam will be comprehensive, covering the whole course, including material covered from chapter 10.

**Important Note: No use of calculators, cellphones or laptop computers will be allowed during exams.**

Scientific calculators may be needed for some homework.

ANYONE UNABLE TO TAKE AN EXAM SHOULD CONTACT THEIR INSTRUCTOR AHEAD OF TIME TO EXPLAIN THE REASON. NO ONE SHOULD MISS THE FINAL UNLESS YOU HAVE A CONFLICT WITH ANOTHER FINAL EXAM. IF YOU HAVE SUCH A CONFLICT, YOU SHOULD TELL YOUR INSTRUCTOR ABOUT IT AT THE START OF THE SEMESTER.

Note: Some students may have class schedule conflicts with the evening exams. Arrangements will be made to accommodate these students so that they will not have to miss other classes. Notify your instructor immediately if

you have a problem taking the scheduled evening exams. Conflicts other than class schedule conflicts will not be accommodated and therefore should be resolved by the student in a timely manner. Students who miss an exam because of illness must contact the instructor ahead of the exam (or as soon afterwards as possible) and provide proof of the illness (doctor's note or call from health service).

## Schedule

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|                            |                      |
|----------------------------|----------------------|
| Week 1: Aug. 31 - Sept. 4  | 6.1, 6.2*, 6.3*      |
| Week 2: Sept. 7 - Sept. 11 | 6.4*, 6.5            |
| Week 3: Sept. 14 - 18      | 6.6, 6.8             |
| Week 4: Sept. 21 - 25      | Review, Exam 1       |
| Week 5: Sept. 28 - Oct. 2  | 7.1, 7.2, 7.3        |
| Week 6: Oct. 5 - Oct. 9    | 7.4, 7.8             |
| Week 7: Oct. 12 - 16       | 11.1, 11.2           |
| Week 8: Oct. 19 - 23       | Review, Exam 2, 11.2 |
| Week 9: Oct. 26 - 30       | 11.3, 11.4           |
| Week 10: Nov. 2 - 6        | 11.5, 11.6           |
| Week 11: Nov. 9 - 13       | 11.8, 11.9           |
| Week 12: Nov. 16 - 20      | 11.10, 11.11         |
| Week 13: Nov. 23 - 27      | 8.1, 8.2             |
| Week 14: Nov. 30 - Dec. 4  | Review, Exam 3, 10.1 |
| Week 15: Dec. 7 - 11       | 10.2, 10.3, 10.4     |
| Week 16: Dec. 14 - 18      | Review, Final Exam   |

## Supplementary Materials and Links

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Here we provide links to documents and websites you may find useful throughout the semester. They do not constitute an official part of the course, nor are they endorsed by the Department of Mathematical Sciences. Use them at your own discretion.

Factorization of polynomials (Useful for working with Partial Fractions)

Useful Limits to Know

Guide to Checking Convergence/Divergence of Series

The following are pdf files with a polar coordinates grid (in radians or degrees) on which you can conveniently make graphs of functions given in polar coordinates.

Polar Coordinates Graph (radians)

Polar Coordinates Graph (degrees)

Visual Calculus - Step by step tutorial on the topics of our course.

For Calc II see:

An excellent source for math videos

Another excellent source for math videos

Integration: Techniques of Integration, Numerical Integration, Improper Integrals

Sequences, Series, Power Series

More

Cycloid

Visual Calculus has guided tutorials on almost all the subjects we're doing. You see a question posted and work on it. If you click on the link, it will do one step of the solution. If that helps you, fine. If not, click again and it will show the next step. Thus, if you get stuck, you can get one hint at a time. It won't give away the answer all at once, so you can practice each step for yourself. Try it!

Calculus On the Web an online tutorial.

The math forum - various math resources. Check out the topics on calculus

MathWorld - more math resources.

Mathnerds - get hints on your math questions.

The archives - Copies of the Math 222 home page for previous semesters.

From:  
<http://www2.math.binghamton.edu/> - **Binghamton University Department of Mathematics and Statistics**

Permanent link:  
<http://www2.math.binghamton.edu/p/people/alex/calc2-archive-fall2015>

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